

1 CLAIMS LISTING

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3 1. (Previously presented) A method of asynchronous data replication over a
4 network, wherein one or more applications send write commands to a primary host,
5 comprising:

6 at the primary host:

7 acknowledging each write command before transmitting the write command to a
8 secondary host;

9 assigning a data set ID to each write command;

10 transmitting each write command before the application has sent all of the write
11 commands of the data set to the primary host;

12 assigning the data set ID to a sync command;

13 transmitting the sync command, wherein the write commands and the sync
14 command define the data set;

15 at the secondary host:

16 receiving the write commands and sync command out of order; and
17 writing the data set to a storage coupled to the secondary host.

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19 2. (Previously presented) The method of claim 1, further comprising tracking
20 the receipt of the write and sync commands at the secondary host.

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22 3. (Original) The method of claim 2, further comprising assigning a unique
23 sequence number for each write command and another sequence number to the sync
24 command at the primary host.

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26 4. (Previously presented) The method of claim 3, wherein tracking the
27 receipt of the write and sync commands includes setting bits in an identifier bitmap
28 corresponding to the data set at the secondary host.

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1 5. (Previously presented) The method of claim 1, further comprising writing
2 a block of the data set to a secondary target VLUN and acknowledging the write and
3 sync commands before receipt of the data set at the secondary host.

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5 6. (Previously presented) The method of claim 1, further comprising storing
6 multiple versions of one of the blocks of the data set at the primary host while waiting for
7 an acknowledgement from the secondary host.

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9 7. (Original) The method of claim 4, further comprising using the identifier
10 bitmap to determine receipt of the data set at the secondary host.

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12 8. (Previously presented) The method of claim 5, further comprising
13 updating a data structure at the secondary host to track blocks of the data set in the
14 secondary target VLUN.

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16 9. (Original) The method of claim 8, wherein updating the data structure at
17 the secondary host includes setting bits in a bitmap and updating a log file.

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19 10. (Previously presented) The method of claim 1, further comprising writing
20 blocks of the data set to a memory buffer at the secondary host and acknowledging the
21 write and sync commands at the secondary host before receipt of the data set.

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23 11. (Original) The method of claim 1, wherein the step of receiving at the
24 secondary host includes receiving write commands belonging to a plurality of data sets
25 that are overlapping with respect to each other.

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27 12. (Previously presented) The method of claim 1, further comprising
28 receiving a second data set at the secondary host, wherein the step of receiving write
29 commands for the second data set precedes receiving the write commands of the data
30 set.

1 13. (Previously presented) The method of claim 11, further comprising storing
2 the data sets in a plurality of data structures.

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4 14. (Original) The method of claim 1, further comprising transmitting the write
5 and sync commands on the network using the Fibre channel protocol.

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7 15. (Original) The method of claim 1, further comprising transmitting the write
8 and sync commands on the network using the iSCSI protocol.

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10 16. (Previously presented) The method of claim 1, wherein the step of writing
11 includes the secondary host writing the blocks of the data set to a secondary source
12 VLUN.

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14 17. (Original) The method of claim 1, wherein the data set contains one or
15 more file system transactions.

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17 Claims 18-27 canceled without prejudice or disclaimer.

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